6

Transportation

Transportation

The transportation strategy has been designed to facilitate a significant mode - shift – from private autos to alternative, more sustainable means of transportation, consistent with the Transportation Master Plan. The transportation network is required to include a Metrorail station, dedicated high-capacity transit corridor, buses, shuttles, car sharing, and bicycle facilities. In addition, an aggressive Transportation Management Plan (TMP) program will be required and parking will be managed, shared, priced, and designed to reduce car trips. The Plan is designed to allow employees and residents access to essential services within a five minute walk, and streetscapes are designed to accommodate easy access to transit and the Metrorail station.

> **"If you plan cities for cars and traffic, you get cars and traffic. If you plan for people and places, you get people and places."**
>
> **- Fred Kent**

A significant portion of the adjoining roadway system is already established with limited opportunity to build additional east-west streets. The geography that gives Potomac Yard its special character – its location between the Potomac River and the adjoining established neighborhoods – also constrains access.

Recommendations include strategies to manage transportation demand, expand the street grid and connectivity, provide additional transit capacity, incorporate an expansive bicycle and pedestrian network and create a culture of people first in a complete green streets context.

A. Transportation Network

In the preparation of the transportation analysis, a set of parameters were developed relating to development density, the future transportation network, travel mode choice (mode split), a 2030 buildout year and general future traffic growth (background traffic). Each of these is briefly described below:

- **Future Metrorail Station:** A new Metrorail station is required by the Plan to support the proposed density and accommodate new person trips.
- **Crystal City/Potomac Yard (CCPY) Transitway:** High-capacity transit service will be provided in dedicated lanes on Route 1 and through the Plan area and Potomac Avenue. It will intersect with the Metro service to create a high-performance transit hub for Potomac Yard.
- **Local and Circulator Transit Service:** Additional local-serving routes will be provided to connect the new development in North Potomac Yard to existing neighborhoods and other destinations with enhanced service local transit.

- **US Route 1 (Jefferson Davis Highway) ("Route 1"):** Route 1 will be widened to accommodate a dedicated high-capacity transitway for the length of Route 1 to Arlington County. Route 1 will not be widened to accommodate additional SOV (single occupancy vehicles) vehicle lanes.
- **Potomac Avenue:** This new major north-south route will connect Route 1 on the south with Crystal Drive on the north and will provide additional north/south capacity for local and non-local trips.
- **Internal Street Network:** The Plan requires a fine-grained, interconnected network of streets with multimodal connectivity to the surrounding neighborhoods.
- **New Landbay K bicycle/pedestrian connection:** This off-street trail connection will tie Potomac Yard directly to Four Mile Run through a linear park connecting Braddock Road and Four Mile Run, enhancing its access to the major regional trail network that currently serves recreational users as well as commuters.

B. Transportation Analysis

A transportation study was conducted to determine the impact of the proposed development at Potomac Yard. The study found that current vehicular traffic conditions along Route 1 and at most intersections adjacent to Potomac Yard are acceptable; however, some delays occur during the peak period. With the increment of background traffic growth, traffic from approved (currently unbuilt) developments, and the completion of Potomac Yard, traffic will increase on roadways and at intersections.

Figure 27. Local and Regional Traffic

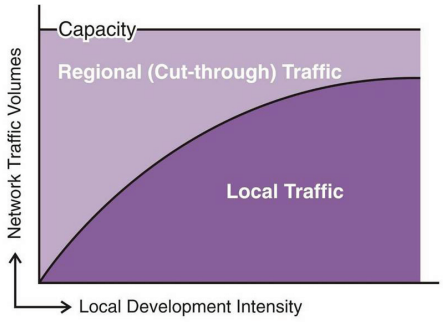
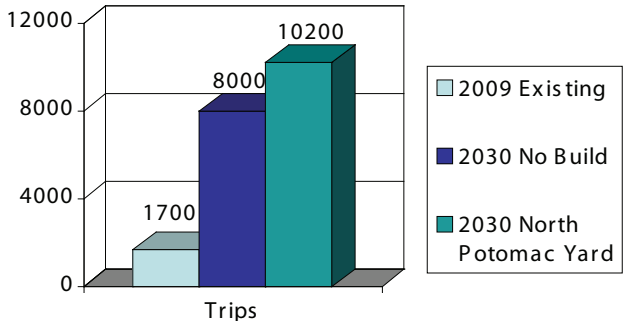


Table 4. PM Trip Generation



The evaluation assumes a 2030 buildout year and that through traffic on Route 1 will grow by approximately 10 percent. This growth is intended to reflect likely increases in traffic attributable to general city growth including development already planned in neighboring jurisdictions and development approved in Landbays G, H, I and J. Regardless of whether or at what density Potomac Yard is redeveloped, Route 1 will operate at capacity in areas. With the recommended multimodal transportation network, most intersections will operate acceptably with the exception of the intersections of Route 1/E. Reed Avenue, Route 1/E. Glebe Road, and Route 1/Potomac Avenue.

Because of the limited east-west connectivity from Route 1 to the west, E. Glebe Road is unable to accommodate the anticipated traffic traveling east-west without additional improvements. The intersection of Route 1/E. Glebe Road has a number of challenges including awkward geometry and adjoining single-family homes. These factors limit the opportunity for improvements to increase capacity. One improvement recommended by the Plan is to include turn lanes on the northwest side of the intersection, but this improvement is limited in the relief it provides at the intersection.

The transportation analysis performed for the Plan is a planning-level analysis without the benefit of specifics regarding locations and types of development on a given block. The development is anticipated to be built out over a 20-30 year period and traffic patterns in the region will likely change over time. All future development applications will require detailed traffic studies to analyze the specific impacts of the blocks based on future transportation data available at that time. These studies will refine the planning-level analysis performed for the Plan. They will also identify traffic impacts associated with specific development and make more detailed recommendations based on the analysis on the traffic impacts on the roadway network at the time of redevelopment and may refine the type and timing of transportation improvements required to support the development.

Table 5. Travel Speed and Time on Route 1 Corridor

2030 Future Conditions with Development Average Weekday PM Peak Hour Travel Speeds and Times for US 1				
Scenario	**Southbound**		**Northbound**	
	Speed (mph)	**Travel Time (min)**	**Speed (mph)**	**Travel Time (min)**
Existing	20.9	5.0	22.3	4.5
Future Conditions without Development	13.1	8.0	14.7	7.0
Future Conditions with Development	16.6	7.0	12.1	8.5

* Future conditions assume the construction of the transitway on US 1, New Street C, and within the Plan area

**Under Future Conditions with Development, US 1 signals are timed with lead-lag left turns and coordinated with 140-second cycle length. Potomac Avenue is timed with coordinated, 90-second cycle length signals.

Source: Kimley-Horn and Associates, Inc.

The significant investments in the multimodal transportation network already planned and recommended in the Plan such as the new Metrorail station and dedicated transit lanes will create substantial capacity to move people and accommodate increases in travel demand associated with continued development in Alexandria as well as in Potomac Yard specifically.

C. Mode Share

To represent the anticipated trip-making patterns associated with the redevelopment of Potomac Yard, assumptions were developed to assign trips to transit, pedestrian, bicycle, and auto modes. The assumptions were based on local, regional, and national experience and evidence for similar scale urban redevelopment projects. Specifically, the recent Metrorail ridership study was consulted in addition to data from the Crystal City, Braddock Road, and King Street Metrorail stations and US Census, Journey to Work data. It is widely recognized that urban, mixed-use developments with accessible transit will result in lower automobile trip generation. When the mode choice assumptions detailed in Table 6 are applied to the proposed mix of uses in North Potomac Yard, the resulting mode share is 47% of the trips being made by automobiles, 37% of the trips being made by transit, and 16% of the trips being made by bike or on foot (Table 6). The mode share assumes buildout of the proposed mix of uses, accessibility to multiple modes of transportation, including Metrorail and dedicated high-capacity transitway, enhanced street connectivity, and bike and pedestrian facilities.

Table 6. Mode Choice Assumptions

Mode Choice Assumptions with a Potomac Yard Metrorail Station					
Land Use	**Transit (Metrorail)**	**Transit (Metrobus, DASH, and CCPY)**	**Pedestrian/ Bicycle (non-auto)**	**Auto**	**Total**
Office: adjacent to a transit station	35%	11%	6%	48%	100%
Office: within ¼ mile of a transit station	21%	9%	6%	64%	100%
Residential: adjacent to a transit station	54%	1%	16%	29%	100%
Residential: within ¼ mile of a transit station	48%	1%	15%	36%	100%
Residential: ¼ to ½ mile of a transit station	31%	5%	10%	54%	100%
Hotel	27%	4%	31%	38%	100%
Entertainment (theater)	26%	6%	11%	57%	100%
Retail: all, excluding large format	29%	8%	27%	36%	100%
Retail: large format	9%	5%	14%	73%	100%

D. Streets and Connectivity

To better address the limited east-west connectivity and support the anticipated level of east-west traffic, and consistent with the recommendations of the Transportation Study, the Plan recommends:

- Physical improvements at the intersection of E. Glebe Road and Route 1;
- New east-west connectivity or comparable street, circulation, and/or transit improvements, as part of any proposed development and any future planning efforts for properties to the west of Route 1;
- Maximize the street grid by configuring Reed Avenue at Route 1 to allow all movements;
- Study the intersection of Commonwealth and Reed Avenues to determine the need for signalization and pedestrian upgrades; and
- Explore and evaluate the option of opening Evans Lane, Wesmond Drive and Lynhaven Drive in the future to provide access to Route 1.

The recommendations of the Plan are consistent with the City's Transportation Master Plan, which recommends a fine-grained street grid to accommodate circulation for all modes through the site and connect to the neighborhoods across Route 1.

The Plan and the transportation analysis show Reed Avenue connecting across Route 1 and serving as an additional east-west connection. This connection is recommended to accommodate the additional traffic from the development. Additional street connections will help disperse traffic and alleviate overburdened intersections. The provision and timing for additional east-west connectivity or comparable street, circulation, and/or transit improvements, will likely be desirable in the future. New east-west connections should continue to be explored as part of development and planning for properties to the west of Route 1.

In addition to exploring additional east-west street connectivity, additional right-of-way to provide turn lanes and enhanced pedestrian accommodations will be necessary at E. Glebe Road at Route 1. The intersection of Commonwealth and Reed Avenues will need to be signalized and studied to improve pedestrian movements. For a discussion of neighborhood impacts and other recommendations to address these issues, see *Chapter 8: Existing Neighborhoods.*

All streets in North Potomac Yard are required to be public and dedicated to the City. The streetscape and public right-of-way must play an important role in managing stormwater while visually reinforcing the environmental sustainability principles of the Plan. Low-impact design techniques that reduce runoff and provide water quality treatment are required to be incorporated as part of the street design. These techniques could include, but are not limited to pervious surfaces for parking spaces and sidewalks, curbside bioretention areas and large, interconnected tree wells irrigated with harvested rainwater.

E. Transit

One of the most important features of North Potomac Yard is its commitment to transit-oriented development. As such, the City is committed to providing levels of transit service which can help the North Potomac Yard achieve a minimum 50% transit mode split throughout its phases of development. This involves a range of transit options which will provide transit services consistent with the amount and type of the planned development.

New transit infrastructure including a new Metrorail station, dedicated high-capacity transitway and expanded local bus service are required by the Plan to support the proposed density. These transit facilities and the Metrorail station in particular, allow for a higher transit ridership and a higher level of development density. Without the new transit infrastructure traffic congestion will overwhelm the street network capacity and the transportation network will fail.

In addition, as discussed in *Chapter 5: Community Facilities*, a Transit Center should be located in North Potomac Yard to support the new transit options.

Figure 28. Metrorail Station Alternatives

Metrorail Station

During the North Potomac Yard planning process, the Metrorail Station Feasibility Work Group ("Work Group") was established to examine the technical and financial feasibility of a new Metrorail station at Potomac Yard. The Work Group analyzed eight potential locations, and did a preliminary screening using factors including station constructability, phasing, and cost. After the initial screening, three of the eight original station location alternatives remained under consideration and could proceed to the environmental analysis phase of the feasibility process: No build, A and the B Alternatives, (see Figure 28). The B alternatives, as depicted and discussed in the Potomac Yard Metrorail Station Concept Development Study, best achieve the intent and vision of the Plan. With regard to financial feasibility, it was determined that a new station (in the location of the B Alternatives would cost between $220 and $235 million (2015 dollars) depending on the alternative.

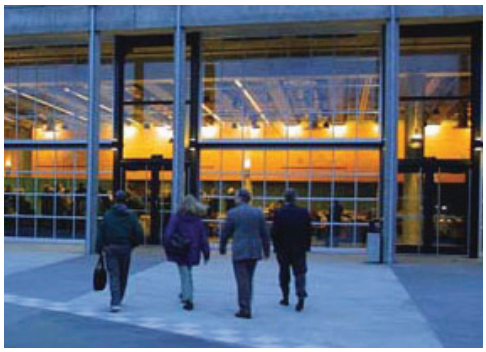


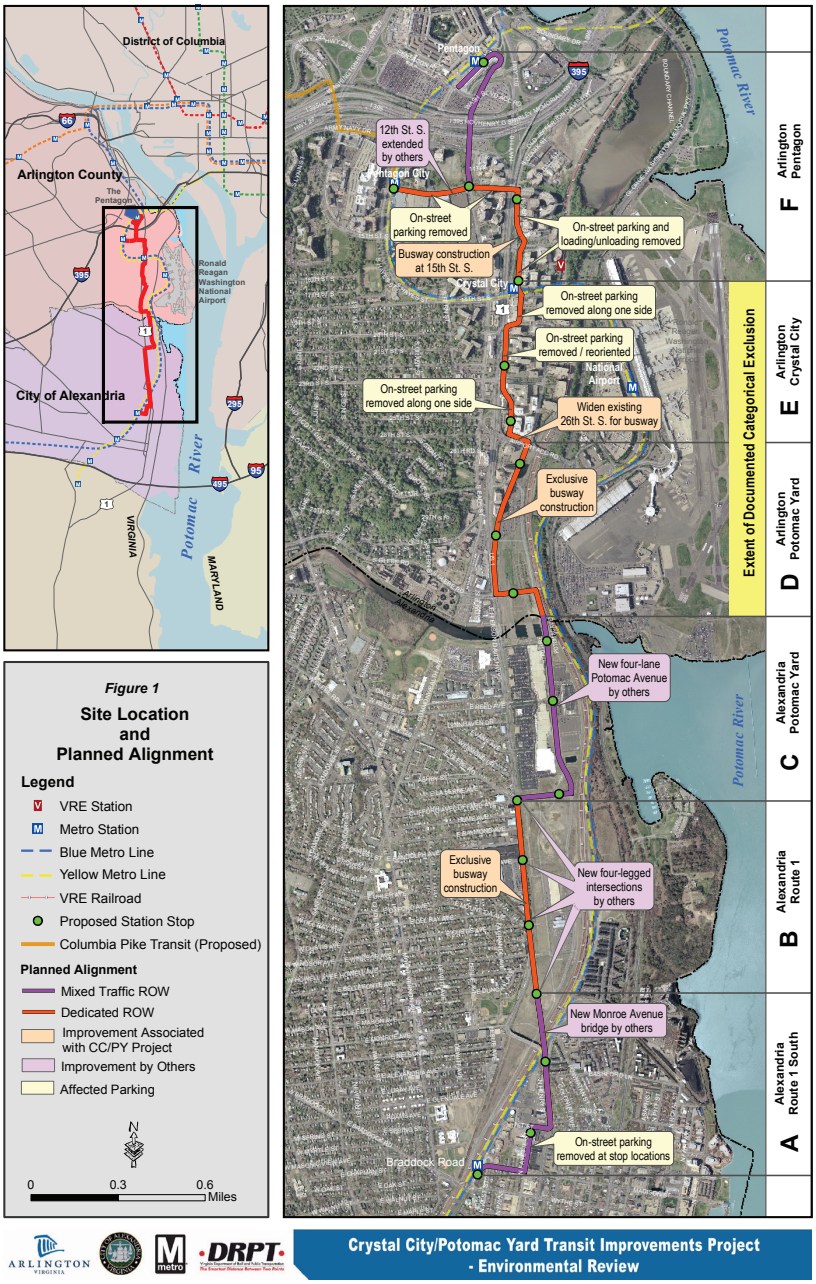
Table 7: Metrorail Station Alternatives Cost Estimates

	Cost (in millions)		
	Low	**Mid-point**	**High**
Alternative A	$190	$220	$250
B Alternatives	$200	$235	$270

Note: Station costs include two mezzanines and a pedestrian access ramp to Potomac Greens.

The implementation of the Metrorail station will require coordination with WMATA, the National Park Service (NPS), Federal highway and transit agencies, CSX and adjoining developers. Issues to be resolved include impacts on the NPS scenic easement, the George Washington Memorial Parkway, and delineation and mitigation of potential impacts to wetlands and floodplains. The developer will be required to contribute substantially to the financing of the construction of the Metrorail station (see *Chapter 9: Implementation*), and special tax districts in all of the Potomac Yard CDD's will be necessary. It is required that federal environmental review processes be followed and that a final station location will not be established until these review processes are completed.

Figure 29. Crystal City/Potomac Yard Transitway Route:



Note: The final alignment of the transitway south of the Route 1 bridge should be consistent with the route established by the Braddock Metro Neighborhood Plan. The route for the portion north of the Route 1 Bridge will be finalized through the zoning and environmental process. The final location of the dedicated transitway and station within Landbay F shall be determined as part of the rezoning process.

Dedicated High-Capacity Transitway

A joint Alexandria-Arlington transitway was planned and approved prior to the North Potomac Yard planning effort (Figure 29). The actual vehicle which will be used on the high-capacity transitway has not yet been determined and may change as the development density increases. Initially, conventional clean-fueled buses are contemplated, and the transitway will be designed to accommodate a higher capacity transit vehicle, such as a streetcar. Design vehicles for the transitway will be determined as future studies are completed, and coordinated with Arlington County.

The City has been awarded a Federal TIGER grant of $8.5 million to construct the portion of the transitway between E. Glebe Road and Monroe Avenue. This funding is in addition to $4 million already granted to the City. Funding for the North Potomac Yard portion of the transitway will require developer contributions.

The current alignment of the high-capacity transitway will operate within a dedicated right-of-way along Route 1, turning east into North Potomac Yard at New Street C and travel through the Plan area into Arlington (Figure 30) (Note that the final route and station locations will be finalized as part of the final configuration of streets, blocks, and buildings within the Flexible Metrorail Zone).

Figure 30. Proposed Dedicated Transitway Route

Note: The final location of the dedicated transitway and stations within Landbay F will be determined as part of the rezoning process.

This route allows an additional stop along Route 1 to serve the Lynhaven community (there is currently inadequate right-of- way width to accommodate an exclusive transit lane at the bridge crossing Four Mile Run). Arlington has made significant investments in a routing along Potomac Avenue, including a station at south Glebe and exclusive right-of-way that is already set aside. Right-of-way will be reserved to maintain a consistent setback the length of the Route 1 frontage.

Dedicated transit lanes are planned within the Route 1 corridor. The plans include: the widening of Route 1 to accommodate dedicated high-capacity transit within a landscaped central median; and provision of left turning movements while promoting a pedestrian-friendly environment designed as an urban boulevard with the transit vehicle within the central median.

The Plan recommends exploring options to incorporate innovative green technologies into the design of the dedicated transit right-of-way. The stations should be designed to include innovative real time transit information and display technologies to include route maps, schedules and local and regional information. Stations will provide shelter from the elements, seating, and lighting. These facilities will be ADA accessible and may also include ability to purchase fare media, level boarding, heating, WiFi/wireless Internet, emergency intercoms, public art, and solar power.

Local and Circulator Transit Service

While Metrorail and dedicated transitway services are critical elements, other modes of transit cannot be overlooked. These are local buses operated by DASH and Metrobus that provide valuable connections between neighborhoods in the City. Currently, North Potomac Yard is served by local bus service, which provides seven day a week service to the existing shopping center. DASH bus service also connects North Potomac Yard to the Del Ray neighborhood. DASH will need to increase the service on this route and to add service from other parts of the City as the project develops. The Metrorail station will also serve as a transit hub for DASH and other transit providers. Longer term plans call for direct bus connections from portions of the City, such as the West End, directly to North Potomac Yard. The Plan recommends that additional local-serving routes should be explored to connect locations within Potomac Yard to nearby communities and destinations.

F. Truck Loading

The growth in office, retail and other development will increase truck loading and deliveries. To maintain efficient traffic circulation, the City will require a comprehensive policy regarding truck loading and deliveries during the development review process. Truck loading and deliveries are prohibited on A and B streets. Additional requirements regarding access and loading will be specified in future design guidelines.

G. Parking Management

Management of on-street and on-site parking is a critical feature of any transportation system and should be carefully coordinated with other transportation considerations. On-street parking spaces will be required to be efficiently managed to maximize turnover of spaces and encourage garage parking for longer stays. On-street parking spaces will be required to be metered and be part of a performance parking program to efficiently manage parking resources.

Parking garages should employ smart parking technologies including variable pricing and available parking space technologies. Wayfinding signage should be employed to efficiently direct drivers to parking garages and clearly indicate price and availability of parking. Parking garage entrance widths shall be minimized.

Figure 31. Bike Lanes

H. Bicycles

The bicycle network requires both on- and off-street bikeways to serve all users and trip types with particular focus on bicycle parking and better connections to transit. The network will enable more people to bicycle for some of their daily trips and increase the proportion of the workforce who cycle to work. The bicycle network is a key element in the multimodal approach to transportation, has health and environmental benefits, and is consistent with the sustainability goals of the Plan.

An off-street shared-use path is required along the length of Landbay K between Braddock Road to the south and Four Mile Run to the north. The Landbay K path will provide a high-quality experience for pedestrians and bicyclists, and serve as a spine for a wider network of paths and associated connections. Designed to minimize conflicts and provide a direct connection between Braddock Metro Neighborhood and Potomac Yard, the trail is an important complement to the street grid.

The slow design speed and urban context of the streets will encourage cyclists to ‘take the lane’ on all streets where appropriate. However, on-street bicycle facilities on primary streets may include bicycle lanes and shared-lane markings (“sharrows”) intended to improve bicycle safety and provide a sense of security. Roadway crossings are critical to the connectivity of the bicycle network and intersections will be designed to stress the convenience and comfort of cycling.

Providing adequate end-of-trip facilities is a critical component of any bicycle network and perhaps more so in transit-oriented developments such as North Potomac Yard. The Plan considers bicycle parking in a number of contexts:

- Bike stations in connection with public transportation along the transitway and Metrorail.
- At homes and at workplaces.
- At shops and retail centers.
- On streets in general.

A connection from Landbay K to the Four Mile Run Trail is recommended as part of the Plan. In addition, a future connection from Landbay K across the George Washington Memorial Parkway to the Mount Vernon Trail should be explored. The Plan should provide a 24-hour bicycle/pedestrian access bridge over the CSX tracks from North Potomac Yard to the east.

I. Water Taxi

The Plan encourages the use of alternative modes of transportation. The possibility of water transportation on the Potomac River and potentially on Four Mile Run would require technical and operational evaluation. Any future proposal for a water taxi will need to be consistent with the intent of the Four Mile Run Restoration Master Plan and Design Guidelines. A water taxi, particularly on the Potomac River, may reduce demand on other transit systems that may be carrying increased numbers of summer tourists and visitors to special events. Water taxis could link Potomac Yard to a growing system of waterfront destinations along the Potomac River, including Old Town, National Harbor, Anacostia, and Georgetown.

J. Transportation Management Plans (TMP)

Transportation Management Plans (TMPs) are a set of specific strategies that influence travel behavior by mode, frequency, time, route or trip length in order to help achieve an efficient and sustainable use of transportation facilities, along with other City goals such as promoting access for all transportation system users, improving mobility, and minimizing the negative impacts of vehicular traffic.

Given the centrality of multimodal transportation in North Potomac Yard, and in order to ensure that the systems and programs are in place as needed to support the density, the Plan requires that future development participate in a TMP district which employs aggressive TMP measures to achieve the 50% mode share targets assumed in the study, and also meet future TMP requirements.

These strategies will include parking maximums, market-rate parking fees for all uses, performance parking, shared parking, parking management, transit passes, “unbundling” parking cost (parking facilities available at additional cost rather than included in unit cost), transit incentives, required TMP plans and monitoring, and similar measures. North Potomac Yard will also be required to participate as part of a TMP district.

Providing market rate parking is an important tool in the TMP strategies employed to create a successful multimodal community. Availability and cost of parking will heavily influence people’s decision whether or not to drive. Parking should be available for those that choose to drive and are willing to pay its cost. At the same time, incentives (financial and otherwise) should be provided to those who choose not to drive. Parking maximums, as discussed in *Chapter 4: Land Use*, are required to achieve the modal split anticipated for new development.

Note:
Specific deadline and submission requirements not specified for recommendations will be determined as part of the rezoning for the subject property.

TRANSPORTATION RECOMMENDATIONS

Streets

6.1 Provide a compact grid of streets consistent and in alignment with, and connecting to the established street grid in Potomac Yard (Potomac Avenue and Main Line Boulevard), on the west side of Route 1, and in Potomac Yard Arlington.

6.2 All streets and rights-of-way shall be dedicated to the City.

6.3 Maximize the street grid within the site and connectivity to adjacent neighborhoods including:

- Reed Avenue at Route 1 shall be configured to allow all movements.
- Explore and evaluate the option of opening Evans, Wesmond, and Lynhaven in the future to provide access to Route 1.
- Study the intersection of Commonwealth and Reed Avenue to determine the need for signalization and pedestrian upgrades.

6.4 Consider all users in the future design of streets and streetscapes.

6.5 Study, develop and implement a comprehensive phased approach to address traffic impacts in neighborhoods adjacent to development and other impacted neighborhoods. (See also recommendations in *Chapter 8: Existing Neighborhoods*).

6.6 New east-west connectivity or comparable street, circulation, and/or transit improvements, should be explored as part of any proposed development and/or any future planning efforts for properties to the west of Route 1.

6.7 With any rezoning of the property, the provision and timing for improvements to the intersection of E. Glebe Road at Route 1 are required.

6.8 Each development will be required to submit a comprehensive approach and policy regarding truck loading and deliveries as part of the development review process.

Transit

6.9 Require the construction of an operational Metrorail station. Rezoning of the property is contingent upon the City and the landowner agreeing to a financial plan funding the Metrorail station.

6.10 In conjunction with other public agencies, a new intermodal transit and transit center shall be constructed proximate to the new Metrorail station.

6.11 Require the construction of a transitway. The final alignment of the transitway and station locations shall be determined with any rezoning for the site.

6.12 Require dedication of right-of-way to accommodate the high-capacity transitway.

6.13 Explore options to incorporate green technologies into the design of the dedicated transit right-of-way and stations.

6.14 Require participation in a Transportation Management (TMP) District in coordination with existing Potomac Yard TMP District.

6.15 Transit stations should be designed to include real-time transit information and innovative display technologies to include route maps, schedules, and local and regional information.

TRANSPORTATION RECOMMENDATIONS (CONTINUED)

6.16 Employ aggressive Transportation Management Plan (TMP) performance measures, meeting or exceeding a 50% modal split.

6.17 Explore additional local-serving routes to connect locations within Potomac Yard to nearby communities and destinations.

Parking

6.18 On-street parking is required to be metered and managed through a performance parking program.

6.19 Provide advanced parking management systems including real-time parking availability, pre-trip parking information and parking reservation/navigation systems.

6.20 Require long and short-term bicycle parking.

Pedestrian – Bicycle

6.21 Provide a continuous, connected and accessible network that enables pedestrians – particularly those with mobility impairments – to move safely and comfortably between places and destinations.

6.22 Develop a comprehensive on- and off-street bicycle network.

6.23 Develop a connected system of primary and secondary bikeways with ample bicycle parking to serve all bicyclists' needs.

6.24 Provide a 24-hour bicycle and pedestrian connection across the railroad tracks to Potomac Greens in conjunction with Metrorail station development.

6.25 Provide centralized bicycle storage facilities, located near the Metrorail and transit locations for all users of Potomac Yard – including areas for private and for shared use bicycles – in conjunction with Metrorail station development. Commuter and recreational bicycle information could also be available to residents and visitors.

6.26 Explore future connection from Landbay K across the George Washington Memorial Parkway to the Mount Vernon Trail.

6.27 Provide a future connection from Landbay K to the Four Mile Run Trail.

6.28 Require an off-street shared-use path along the length of Landbay K between Braddock Road to the south and Four Mile Run to the north.